

Patent claims

1. Method for lifting and/or lowering of objects in connection with a wind turbine or a similar construction, c h a r a c t e r i s e d in that an uplift device is made to lift
5 itself and/or lower itself in the proximity of the wind turbine or the similar construction, in as much as the uplift device possibly is controlled in relation to the wind turbine or the similar construction and at least one object is supported by said uplift device.
- 10 2. Method according to claim 1, c h a r a c t e r i s e d in that said at least one object consists of a device arrangement for inspection, treatment or the like of at least one part of the wind turbine or the similar construction.
- 15 3. Method according to claim 1 or 3, c h a r a c t e r i s e d in that said at least one object consists of a locking device for the establishing of an anchoring to a part of the wind turbine or the similar construction.
4. Method according to one or more of the claims 1 – 3 for the establishing of an anchoring on or at a wind turbine, c h a r a c t e r i s e d in that
20 - an uplift device is positioned in the proximity of the wind turbine,
- said uplift device is allowed to raise itself in a manner which is at least partly controlled, and
- a locking device which is borne by said uplift device is brought to grip in or around a part of the wind turbine, preferably in a releasable manner.
- 25 5. Method according to one or more of the claims 1 – 4, c h a r a c t e r i s e d in that the uplift device is allowed to raise itself in a manner which is at least partly controlled, under control in relation to one or more fixture points on, in or at a vehicle or a vessel or possibly on the ground, for example by means of one or more
30 lines.
6. Method according to one or more of the claims 1 – 5, c h a r a c t e r i s e d in that the uplift device is allowed to raise itself in a manner which is at least partly

controlled, under control in relation to one or more parts of the wind turbine,
including a wind turbine blade or the wind turbine tower.

5 7. Method according to one or more of the claims 3 – 6, characterised in that
the locking device is brought to grip in or around a blade, preferably in the vicinity of
the root of this.

10 8. Method according to one or more of the claims 3 – 7, characterised in that
the locking device is brought to grip in or around a hub for the blades of the wind
turbine.

9. Method according to one or more of the claims 3 – 8, characterised in that
the locking device is brought to grip in or around the turbine tower.

15 10. Device for lifting and/or lowering of objects in connection with a wind turbine or
a similar construction, characterised in that the device (10, 110) comprises an
uplift device (12, 112), means for controlling the uplift device in relation to the wind
turbine (1) or the similar construction, and means for carrying at least one object
supported directly or indirectly by said uplift device.

20 11. Device according to claim 10, characterised in that said at least one
object consists of a device for inspection, treatment or the like of at least a part of the
wind turbine (1) or the similar construction.

25 12. Device according to claim 10 or 11 for the establishing of an anchoring on or at a
wind turbine, characterised in that the device comprises
- an uplift device (12, 112) and
- a locking device (20, 120),
said locking device having means (128) for gripping in or around a part of a wind
30 turbine, preferably in a releasable manner.

13. Device according to claim 10, 11 or 12, characterised in that the device
(10, 110) comprises means for use for control during the uplift, said means

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comprising lines (34a, 34b) or the like for control in relation to fixture points for example on, in or at a vehicle (8) or a vessel (13) or possibly on the ground, and/or means for control in relation to a part of the wind turbine (1), for example a wind turbine blade (5) or the wind turbine tower (2).

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14. Device according to one or more of the claims 10 – 13, characterised in that the device comprises means for fastening of elements (124, 126) for use in positioning, lifting, lowering or the like of apparatus or parts.

10 15. Device according to one or more of the claims 10 – 14, characterised in that said uplift device comprises at least one element (14, 14a, 14b, 14c, 114, 115, 116, 117), possibly a U-shaped, round or annular element, which can be filled with an air or gas, for example helium.

15 16. Device according to claim 15, characterised in that said uplift device comprises at least two of said elements (14, 14a, 14b, 14c, 114, 115, 116, 117) which can be filled with an air or gas, for example helium, and which are connected directly or indirectly to said locking device (20, 120).

20 17. Device according to one or more of the claims 10 – 16, characterised in that the device comprises a U-shaped or round element, possibly by said uplift element comprising at least one element which is U-shaped, round or annular, and which can possibly be filled with an air or gas, for example helium, whereby said round element can serve to control the device during lifting and/or lowering, for
25 example in relation to a wind turbine blade or a wind turbine tower.

18. Device according to one or more of the claims 10 – 17, characterised in that the device (10, 110) comprises a frame device (122, 160) which is possibly annular, box-shaped or the like, and which is connected to the uplift device (12, 112)
30 and/or the locking device (20, 120).

19. Device according to one or more of the claims 10 – 18, characterised in that the device comprises a control part, possibly in the form of a wind vane (170)

which, under influence of the wind, can at least partly control the position of the device in relation to the wind direction.

20. Device according to one or more of the claims 12 – 19, characterised in
5 that said locking device (20, 120) is configured in such a manner that a loading of the device (10, 110) will result in the transfer of a force to said means (128) for gripping in or around a part of the wind turbine.

21. Use of a method according to one or more of the claims 1 – 9 and/or a device
10 according to one or more of the claims 10 – 20 for lifting and/or lowering of a work platform, preferably in the treatment, inspection or the like of a part of a wind turbine, including especially a wind turbine blade.

22. Use of a method according to one or more of the claims 1 – 9 and/or a device
15 according to one or more of the claims 10 – 20 for lifting and/or lowering of a device for cleaning, washing, surface treatment etc., for example a device in the form of a washing robot, for a part of a wind turbine, and including preferably a wind turbine blade.

20 23. Use of a method according to one or more of the claims 1 – 9 and/or a device according to one or more of the claims 10 – 20 for lifting and/or lowering of a part of a wind turbine, including for example a wind turbine blade.

24. Use of a method according to one or more of the claims 1 – 9 and/or a device
25 according to one or more of the claims 10 – 20 for lifting and/or lowering of equipment, for example inspection equipment, vision equipment, measuring equipment etc., for inspection of a part of a wind turbine, including for example a wind turbine blade.